Quagga Mussels
Frequently Asked Questions
February 26, 2016

1. What is the status of quagga mussels in Lake Powell?

The reproducing population of quagga mussels in the southern portion of Lake Powell has expanded as far north as the Escalante and San Juan arms of the lake. Adult mussels in the area are obvious near the surface, but their numbers are expected to continue increasing at a high rate. A second center of mussel production has developed near Bullfrog and Halls Crossing Marinas. Adult quagga mussels in uplake areas are still rare, but their populations will increase very rapidly now.

2. Are quagga mussels in the river below the dam?

Quagga mussels were identified in sampling locations between Glen Canyon Dam and Lees Ferry in November 2014. Mussel larvae (veligers) pass through the Glen Canyon Dam and low numbers of adult mussels have been confirmed in the Glen Canyon stretch of the river. In 2007, the U.S. Geological Survey published a assessment on the risk of quagga mussels establishing in the Colorado River Ecosystem below Glen Canyon Dam. The report found that while establishment within Glen Canyon was likely, that the sediment levels in Grand Canyon would likely limit their ability to become established below the Paria River. The report also points out that negative ecological impacts appear to be low and that moderate densities of quagga mussels may increase food available to fish, increase the complexity of habitat and stimulate additional benthic production. A link to the report can be found at http://pubs.usgs.gov/of/2007/1085/.

Mussels continue to be found in the river below the dam. Their distribution is patchy and highly influenced by fluctuating water levels and location-specific flow regimes.

3. Can the NPS eliminate or stop the spread of mussels within Lake Powell?

There are no current technologies or treatments that would allow for eradication of the initial population in an open water environment the size of Lake Powell. Options to slow the spread of mussels within Lake Powell, such as restrictions on boat movements, were considered. However, due to questionable efficacy, significant disruption to visitors and lake operations, and the difficulty of enforcing restrictions, these options were not implemented. Veligers are also dispersed upstream by wind-generated currents and are expected to colonize the entire reservoir.

Indications of mussel reproduction, which shows that adult mussels have colonized an area, are now present in practically all areas of the lake.

4. What changes will occur for boaters now that mussels exist at Lake Powell?

The Aquatic Invasive Species (AIS) Program at Glen Canyon National Recreation Area will transition from a focus on prevention of mussels being introduced into the lake, to a focus on containing the spread of quagga mussels from Lake Powell to other bodies of water.

- No certificates are required for launching.
- Ramp hours will no longer be restricted.

5. Will different types of boats be treated differently?

The NPS identified and ranked the relative risks of different pathways for both the introduction of aquatic invasive species to Lake Powell and the potential spread of quagga mussels from Lake Powell. For spread of adult mussels, long-term slipped and moored watercraft were identified as a high risk vector. Short-term come-and-go watercraft were identified as a lower risk for spreading adult mussels. The NPS has developed appropriate strategies to prevent mussels spread for each of these classes of boats.

ALL VESSELS AND EQUIPMENT BEFORE LAUNCHING: Required self-decontamination (Clean, Drain, and Dry). If visible mussels or other invasive species are identified the vessel will be prevented from launching until the threat can be removed.

ALL VESSELS AND EQUIPMENT BEFORE LEAVING: Required self-decontamination—Clean and Drain before leaving the area; Dry before re-launch. Professional decontamination will be required if the boat is going to be launched without adequate dry time. (See state laws for specifics).

SLIPPED AND MOORED VESSELS: Required to be inspected and if necessary, professionally decontaminated in accordance with Arizona and Utah state laws.

COMMERCIAL ACTIVITY (permit holders, commercial businesses that operate in the park, contractors): Required to be inspected and if necessary, professionally decontaminated in accordance with Arizona and Utah state laws. This requirement will apply to agency controlled watercraft upon exit from Lake Powell for transport to other waters. This will be managed as a concessioner, contractor, and permittee responsibility as law and policy allow.

6. Where can boats get a hot wash or decontamination?

For the 2016 boating season, Glen Canyon will offer decontamination services for any non-agency-controlled vessel (other than concessioner, contractor, permittee) observed entering or exiting the park with confirmed visible (or detectable) aquatic invasive species. Glen Canyon National Recreation Area does not have the infrastructure or the resources to use the few existing NPS decontamination stations for the hundreds of thousands of watercraft using Lake Powell. The NPS will work with local entities to increase inspection and decontamination capability to serve Lake Powell boaters. If self-decontamination will not work for a visiting boater, professional decontamination is available from private businesses near Lake Powell as well as state operated facilities in Utah. NPS employees as well as staff from the states of Utah (http://wildlife.utah.gov/mussels/decon_units.php) and Arizona (http://www.azgfd.gov/ais) can provide information on professional decontamination services, when necessary.

7. What is the NPS doing to stop the spread of mussels to other lakes and rivers?

The invasive species education program has been expanded to include additional information on the procedures required by both Utah and Arizona state laws concerning mussels and other invasive species.

- Rangers contact boaters both entering and exiting the park.
- Websites and other online media are utilized to inform boaters before they visit Lake Powell.
- Flyers, posters and other written materials are produced and distributed to the public.
- Partnerships with Arizona and Utah wildlife divisions to stop the spread of mussels will continue.

8. What has the NPS done to slow the introduction of mussels into Lake Powell?

The NPS operated a very aggressive mussel prevention program at Lake Powell from 2000 to 2013. The approximate cost of the program was over $7.5 million dollars.

- Inspections, limited ramp hours, and decontaminations were implemented to prevent the introduction of mussels into the lake.
- In 2013, 20,000 high-risk vessels were identified and inspected; approximately 6,000 of these high-risk vessels required a decontamination treatment.
- Thirty-eight vessels with adult mussels transported from other waters were stopped at Lake Powell in 2012.
- Scientists' prediction that Lake Powell would be the first Western mussel infestation was thwarted.

9. What impacts could occur from mussels in Lake Powell?

Impacts from an invasive species in a new environment cannot be predicted with precision; however, mussel impacts are well documented and Lake Mead provides a relatively similar system to Lake Powell that can be used to anticipate impacts. Expected quagga mussel impacts include:

- Disruption of the aquatic food chain
- Degraded sport fishing
- Fouled boats and marina facilities such as docks and ramps
- Clogged intake pipes and increased maintenance costs for water related facilities and boat engines
- Littered beaches with sharp and smelly shells.

10. Are there other Aquatic Invasive Species (AIS) of concern for Lake Powell?

Even with quagga mussels already in Lake Powell, potential invasion by other aquatic invasive species are of concern. Zebra mussels (a close relative of quagga mussels) remain a threat to Lake Powell, as do a virtually unlimited number of other aquatic species that could be spread to the Lake. Any aquatic species that is transported to new waters can become a problem.

11. Are other agencies/partners helping to control the spread of mussels?

Preventing the spread of mussels is everyone's responsibility. Glen Canyon National Recreation Area participates in meetings with approximately twenty partner organizations representing local, state, and federal entities and businesses to coordinate mussel prevention and containment efforts at Lake Powell. The states of Utah and Arizona have established laws and regulations to prevent the spread of mussels; begun development of inspection and decontamination capability across the states; and mounted aggressive education campaigns. Other Department of Interior agencies, such as the Bureau of Reclamation and the U.S. Fish and Wildlife Service are very active with research to control mussels, educate boaters, and fund efforts to stop the spread.

12. What can the public do to help? How can boaters find information on the new state regulations?

- When leaving Lake Powell, all watercraft and equipment are required by state laws to be decontaminated. Most boaters need only self-decontaminate: clean, drain, and dry their boats, watercraft, and equipment.
- Regulations vary depending on the state, so boaters should review the regulations of any states they will enter with their equipment after being in Lake Powell, including but not limited to Arizona and Utah. For more specific information concerning:
  o Arizona: http://www.azgfd.gov/ais
  o Utah: http://wildlife.utah.gov/mussels/decon_units.php
  o Other states should be contacted to find specific requirements on decontamination, as necessary.

Clean, drain, and dry! The spread of mussels and other aquatic invasive species is preventable. Cooperate with prevention and containment program efforts at Lake Powell and other water bodies. Spread the message, not the mussels.